Notice of Allowability	Application No.	Applicant(s)	
	10/790,186	STINSON ET AL.	
	Examiner	Art Unit	
	Sujoy K. Kundu	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *April 27, 2006*.

2. ☒ The allowed claim(s) is/are *106-160*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

EXAMINER'S AMENDMENT

An examiner's amendment is being made to claim 1 to overcome the 35 U.S.C. 101 issue. The amendment is made after corresponding with Ralph Dowell, Reg. No. 26,868 on May 11, 2006. The amendment to Claim 1 is as follows:

Claim 1: A method for producing an initial velocity field estimate for control plane from seismic data associated with said control plane and comprising time-amplitude representations associated with source-receiver locations spaced apart by an offset distance and having a midpoint there between, the seismic data being arranged into common midpoint (CMP) gathers associated with respective CMP locations and the control plane having an edge intersecting a plurality of the CMP locations, the method comprising:

a) producing starting velocity field estimate from an initial range of velocity values and an initial range of velocity values and an initial range of time values;

b) producing a migrated starting velocity from said starting velocity field estimate and said seismic data;

c) producing pre-stack imaged gathers by performing a 2-dimensional pre-stack imaging process on said seismic data;

d) producing normal moveout gathers in response to said migrated starting velocity field, including performing a normal moveout operation on said pre-stack imaged gathers;

e) adjusting said migrated starting velocity field in response to said normal moveout gathers and said migrated starting velocity field to produce a plurality of time-velocity values acting as said initial velocity field and said initial velocity field being stored in a computer readable medium.

Allowable Subject Matter

Claims 106-160 allowed.

Pertinent Art Cited

Pham (5,978,314) teaches a method for producing an initial velocity field estimate for control plane from seismic data associated with said control plane and comprising time-amplitude representations associated with source-receiver locations spaced apart by an offset distance and having a midpoint there between, the seismic data being arranged into common midpoint (CMP) gathers associated with respective CMP locations and the control plane having an edge intersecting a plurality of the CMP locations, the method comprising: a producing starting velocity field estimate from an initial range of velocity values and an initial range of velocity values and an initial range of time values; producing a migrated starting velocity from said starting velocity field estimate and said seismic data; producing pre-stack imaged gathers by performing a 2-

dimensional pre-stack imaging process on said seismic data; and producing normal moveout gathers in response to said migrated starting velocity field, including performing a normal moveout operation on said pre-stack imaged gathers.

Krebs et al. (6,493,634) teaches a method for producing an initial velocity field estimate for control plane from seismic data associated with said control plane and comprising time-amplitude representations associated with source-receiver locations spaced apart by an offset distance and having a midpoint there between, the seismic data being arranged into common midpoint (CMP) gathers associated with respective CMP locations and the control plane having an edge intersecting a plurality of the CMP locations, the method comprising: a producing starting velocity field estimate from an initial range of velocity values and an initial range of velocity values and an initial range of time values; producing a migrated starting velocity from said starting velocity field estimate and said seismic data; producing pre-stack imaged gathers by performing a 2-dimensional pre-stack imaging process on said seismic data; and producing normal moveout gathers in response to said migrated starting velocity field, including performing a normal moveout operation on said pre-stack imaged gathers.

De Bazelaire et al. (5,663,928) teaches a method for producing an initial velocity field estimate for control plane from seismic data associated with said control plane and comprising time-amplitude representations associated with source-receiver locations spaced apart by an offset distance and having a midpoint there between, the seismic

data being arranged into common midpoint (CMP) gathers associated with respective CMP locations and the control plane having an edge intersecting a plurality of the CMP locations, the method comprising: a producing starting velocity field estimate from an initial range of velocity values and an initial range of velocity values and an initial range of time values; producing a migrated starting velocity from said starting velocity field estimate and said seismic data; producing pre-stack imaged gathers by performing a 2-dimensional pre-stack imaging process on said seismic data; and producing normal moveout gathers in response to said migrated starting velocity field, including performing a normal moveout operation on said pre-stack imaged gathers.

Reasons for Allowance

The following is an examiner's statement of reasons for allowance: Although Pham, Krebs, and De Bazelaire disclose a method for producing an initial velocity field estimate for control plane from seismic data associated with said control plane and comprising time-amplitude representations associated with source-receiver locations spaced apart by an offset distance and having a midpoint there between, the seismic data being arranged into common midpoint (CMP) gathers associated with respective CMP locations and the control plane having an edge intersecting a plurality of the CMP locations, the method comprising: a producing starting velocity field estimate from an initial range of velocity values and an initial range of velocity values and an initial range of time values; producing a migrated starting velocity from said starting velocity field estimate and said seismic data; producing pre-stack imaged gathers by performing a 2-

dimensional pre-stack imaging process on said seismic data; and producing normal moveout gathers in response to said migrated starting velocity field, including performing a normal moveout operation on said pre-stack imaged gathers. All three fail to teach adjusting said migrated starting velocity field in response to said normal moveout gathers and said migrated starting velocity filed to produce a plurality of time-velocity values for each of the CMP locations, said plurality of said time-velocity values acting as said initial velocity.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sujoy K. Kundu whose telephone number is 571-272-8586. The examiner can normally be reached on M-F 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on 571-272-2269. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SKK
05/11/2006

BRYAN BUI
PRIMARY EXAMINER